

# Physics 260 Vibrations, Waves, Heat, Electricity & Magnetism (Online Virtual Classroom)

**PHYS 260**  
Fall 2020

## Learning Outcomes

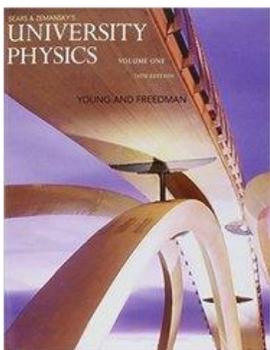
This is the second semester course of a three semester calculus based general physics course. Topics covers include vibrations, waves, temperature and heat, kinetic theory and thermodynamics. electrostatics and electrical circuits

The course consists of 2 weekly lectures Monday and Wednesday at 4:30pm as well as a 50 minute discussion section conducted by a TA. There is also a lab for this course (Phys 261) which is scheduled and graded independently of Phys 260. However, you are expected to take both Phys 260 and Phys 261 in the same semester. When you registered for Phys 260 you also registered for one of the discussion sections. You are expected to attend this section regularly via ZOOM. You are expected to attend your assigned discussion sections. Quizzes will be scheduled during the lecture via ZOOM, if you miss a quiz, you will not get credit for it.

The course will be conducted **online via ZOOM and ELMS**. You must be able to download course material, the quizzes and exams and post the completed documents on ELMS. You will have to participate in the scheduled virtual class & section session via ZOOM

## Required Resources & Textbook

Course website: [www.elms.umd.edu](http://www.elms.umd.edu)



*Sears and Zemansky's University Physics*  
Hugh D. Young and Roger A. Freedman  
The 14th edition (2016).

ISBN 13: 978-0-321-97361-0 Pearson

A 15<sup>th</sup> edition is available, but we will continue to use the 14<sup>th</sup> edition. You should have already acquired this text for your first physics course of this sequence (Physics 161)

**Prof. Andris Skuja**  
[skuja@umd.edu](mailto:skuja@umd.edu)

**Class Meets**  
Mondays & Wednesdays  
4:30-5:45pm  
Online

**Office Hours**  
Online by appointment

**Lecture (all sections)**  
MW 4:30pm to 5:45pm  
**Online via ZOOM**

**Discussion Sections all  
Online via ZOOM**

Section 101 Tuesday  
11:00am to 11:50am

Section 102 Wednesday  
10:00am to 10:50am

Section 104 Wednesday  
9:00am to 9:50pm

Section 105 Friday  
3:00pm to 3:50pm

**TAs and Graders**

## The Online Virtual Learning Experience:

You will have to attend the virtual class via ZOOM. Lectures will be given at the scheduled time and will be recorded and available on ZOOM via ELMS. The lecture material will also be posted on ELMS.

Quizzes will be given weekly in class in real time. You will have about 15 minutes to answer the quiz question and post it on ELMS. Mid Term Exams will be given on designated days during class time. You will have 75 minutes to answer the Exam questions and post the answers on ELMS. You must be able to post your answers on ELMS both for Quizzes and Exams.

Homework will be assigned weekly and will be done via *theexpertta* website. You will have to pay to access *theexpertta* website.

The first lecture will be on Monday, August 31 at 4:30pm on ELMS.

**Prerequisites:**  
Physics 161 and  
Math 141

**Co-requisites:**  
Physics 261

## C Campus Policies

It is your shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

- Academic integrity
- Student and instructor conduct
- Accessibility and accommodations
- Attendance and excused absences
- Grades and appeals
- Copyright and intellectual property

Please visit [www.ugst.umd.edu/courserelatedpolicies.html](http://www.ugst.umd.edu/courserelatedpolicies.html) for the Office of Undergraduate Studies' full list of campus-wide policies and follow up with me if you have questions.

## Activities, Learning Assessments, & Expectations for Students

- During class, I will present the course material through slides, demonstrations and examples. The lectures, demonstrations, and discussions are all tools to demonstrate the material and help you learn.

- Students are strongly encouraged to read the relevant text prior to class and be prepared to participate and ask questions.
- You will be assessed based on homework, quizzes and exams.
  - **Quizzes** will be given during the Lecture Period online. They are designed to motivate you to keep up with the reading and other course content. They will also be a valuable diagnostic indicating your weekly progress in the course. Quizzes will account for 20 % of your grade.
  - **Homework** will be assigned weekly. There is no better way to learn than through practice! The homework assignments will be assigned through *theexpertta* website via ELMS. You will have to purchase access to *theexpertta* website. This can be done via ELMS
  - There will be **three midterm exams and a final exam**. They will be closed book, but you will be asked to provide a sheet of constants and formulae before each exam. However, you are expected to memorize the most crucial mathematical representation of the physics concepts you have learned. A limited number of calculators will also be made available, if necessary.
  - I will drop your lowest quiz scores and your lowest homework scores.
  - No late submissions will be accepted, and no makeups will be given for unexcused absences.
  - If you know in advance that you will have an excused absence (i.e. a religious holiday), please notify me at least two weeks in advance to make arrangements to make up the work.

## Calculators

You will need a scientific calculator with trigonometry and exponential functions not connected to the internet to make calculations during quizzes and exams.

## Home Work

You will have to buy a *theexpertta.com* account to submit your homework. Do so via ELMS.

## Course-Specific Policies

**Lectures will be given online via ZOOM. The link to Zoom will be provided in advance.**

**You will be allowed to ask questions during the lectures and you are encouraged to ask questions during your specific section also conducted via ZOOM.**

## Homework Assignments:

Homework will be done via *theexpertta* website . You must submit your homework answers for the assigned homework problems over the internet using *theexpertta* website.

You will have to purchase an account on *theexpertta* in order to complete the required homework assignments. When you initially click on the first Homework assignment on ELMS , it will take you to *theexpertta.com* and you will be able to purchase your access rights at that point. Note that *theexpertta.com* allows **two free introductory access sessions but no more than two.**

Note that you have to purchase a **separate unique account** for each course each semester on *theexpertta.com*

## Get Some Help!

You are expected to take personal responsibility for your own learning. This includes acknowledging when your performance does not match your goals and doing something about it. Everyone can benefit from some expert guidance on time management, note taking, and exam preparation, so I encourage you to consider visiting <http://ter.ps/learn> and schedule an appointment with an academic coach. If you just need someone to talk to, visit <http://www.counseling.umd.edu>.



**Remember that the key to really learning physics is to solve as many problems as possible and not necessarily only the ones assigned for homework or discussed in class.** Physics involves new ideas that may not be part of your daily thinking. These ideas are formulated mathematically and you have to become familiar with these ideas and their mathematical representation and become comfortable with the culture of physics and its relevance to the scientific method. The mathematical representation is part of gaining an understanding of these ideas and the best way to familiarize yourself with doing so is to solve problems. You do not have to solve problems on your own. Discuss the ideas you have encountered and their mathematical representation with other students, with TAs and me

Some suggestions to improve your understanding of the material and to gain confidence with the mathematical representation of physics concepts:

- ***Read about the topic to be covered in class in the textbook before the lecture***, so that you have some familiarity with the material. Doing so will help you stay focused in class.
- When solving problems, try to form a visual image of the problem and the physics concept under consideration before attempting to solve the problem mathematically. Don't guess at a solution. Draw a diagram, state or list the assumptions of the problem, invoke the physics concepts involved, list the mathematical representation of the concept and only then try to reach the desired conclusion. I will try to give you guidance to this procedure in class so that you can gain confidence to employ it.
- Try to solve as many as four or five extra relevant physics problems (from the textbook or the internet) every day in addition to the assigned homework problems.

Everything but individual tutoring is free because you have already paid for it, and **everyone needs help**... all you have to do is ask for it. If necessary, individual tutoring may be arranged through the Undergraduate Physics Office in the Toll Physics Building

## Grades

Grades are not given, but earned. Your grade is determined by your performance on the learning assessments in the course. If earning a particular grade is important to you, please speak with me at the beginning of the semester so that I can offer some helpful suggestions for achieving your goal. I am here to help!

Homework scores and Quiz grades will be posted on the ELMS page. Exams Grades will also be posted on ELMS. If you would like to review any of your grades (including the exams), or have questions about how something was scored, please email the TA to schedule a time to discuss your grade

Late work will not be accepted for course credit so please plan to have it submitted well before the scheduled deadline. I am happy to discuss any of your grades with you, and if I have made a mistake I will immediately correct it. Any formal grade disputes must be submitted in writing and within one week of receiving the grade.

Learning Assessments	#	Category Weight
Quizzes: during lecture period (best 11 out of 12)	about 12	20%
Homework: submitted on ELMS using <i>theexpertta</i> website	about 12	20%
Midterm Exams:	3	(2@ 15% each) 30%
Final Exam	1	30%

A student **must take and pass the final exam to get a passing grade** in the course. If a student misses the final because of a University sanctioned excuse, accommodation will be made to take the exam at a later date.

Final letter grades are assigned based on the percentage of total assessed points earned. To be fair to everyone I have to establish clear standards and apply them consistently, so please understand that being close to a cutoff is not the same as making the cut. It would be unethical to make exceptions for some and not others.

In physics, it is often difficult to obtain grade distributions that match the nominal University expectations. The course grade distribution will follow roughly 20% A's, 40% B's, 30% C's, and 10% D's and F's. There is no need for any failing grades if all students work diligently. The percentage boundaries are somewhat fluid, and a higher percentage of A's or B's can easily be accommodated if deserved.

To obtain the nominal grade distribution one may have to curve the grades both for the average and the standard deviation. Students like a curving process that raises their grades but do not like one that lowers them. An unbiased curving process may do both. Consequently it is unlikely that grades will be curved.

**The nominal University grade distribution is as follows.**

Final Grade Cutoffs					
+	97.00%	+	87.00%	+	77.00%
A	92.00%	B	82.00%	C	72.00%
-	90.00%	-	80.00%	-	70.00%
		D	62.00%	F	<60.00%
		-	60.00%		

If the course grades match these elevated expectations I will use the University standard but the letter grade boundaries will may be somewhat lower.

## Course Schedule

This schedule is approximate, we may move slower or faster, depending on the volume of class discussion. Please refer to ELMS for up to date announcements.

DATES	TOPICS COVERED
8/31 9/2	Course overview and Mechanical waves (Chapter 15)
9/7 9/9,	Sound and Hearing (Chapter 16)
9/14 9/16	Temperature and Heat (Chapter 17)
9/21	Thermal Properties of Matter (Chapter 18)
9/23	<b>First Midterm EXAM</b>
9/28 9/30	Thermal Properties of Matter (Kinetic Theory) (Chapter 18) First law of Thermodynamics (Chapter 19)
10/5 10/7	First Law of Thermodynamics (Chapter 19) Second Law of Thermodynamics (Chapter 20)
10/12 10/14	Second Law of Thermodynamics (Chapter 20)
10/19 10/21	<b>Review and Second Midterm EXAM</b>
10/26 10/28	Electric Charge and Electric Field (Chapter 21)
11/2 11/4	Gauss's Law (Chapter 22) Electric Potential (Chapter 23)
11/9 11/11	Electric Potential (Chapter 23) Capacitance and Dielectrics (Chapter 24)
11/23	<b>Third Midterm EXAM</b>
11/25	<b>Thanksgiving Break</b>
11/30 12/2	Current, Resistance and EMF (Chapter 25) Direct Current Circuits (Chapter 26)
12/7	Direct Current Circuits (Chapter 26)
12/9	<b>OVERVIEW &amp; REVIEW</b>
12/14	<b>OVERVIEW &amp; REVIEW</b> (last day of class)
<b>Final Exam Time to be announced</b>	
<b>Location will be announced</b>	

**Note:** This is a tentative schedule, and subject to change as necessary – monitor the course ELMS page for current deadlines. In the unlikely event of a prolonged university closing, or an extended absence from the university, adjustments to the course schedule, deadlines,

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